IS 12448-5-1 (1989): Basic testing procedures and measuring methods for electromechanical components for electronic equipment, Part 5: Impact tests (free components), static load tests (fixed components), endurance tests, overload tests, Section 1: Impact test [LITD 3: Electromechanical COmponents and Mechnical Structures for Electronic Equipment]

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IS 12448 (Part 5/Sec 1) : 1989
(Reaffirmed 2002)

Indian Standard

BASIC TESTING PROCEDURES AND MEASURING METHODS FOR ELECTROMECHANICAL COMPONENTS FOR ELECTRONIC EQUIPMENT

PART 5 IMPACT TESTS (FREE COMPONENTS), STATIC LOAD TESTS (FIXED COMPONENTS), ENDURANCE TESTS AND OVERLOAD TESTS

Section 1 Impact Tests (Free Components)

भारतीय मानक

इलेक्ट्रानी उपस्कर के विद्युतयांत्रिक घटकों की आधारभूत परीक्षण प्रक्रियाएं और मापन पद्धतियां

भाग 5 संघट्ट परीक्षण (मुक्तघटक) स्थैतिक भार परीक्षण (स्थिर घटक) सहयता परीक्षण और अधिभार परीक्षण

अनुभाग 1 संघट्ट परीक्षण (मुक्त घटक)

UDC 621·38·038 : 621·316·54·620·199 : 621·3·016·34

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Price Group 2

FOREWORD

This Indian Standard (Part 5/Sec 1) was adopted by the Bureau of Indian Standards on 23 March 1989, after the draft finalized by the Electromechanical Components for Electronic Equipment Sectional Committe had been approved by the Electronics and Telecommunication Divison Council.

The object of this standard is to lay down a standard test method to assess the ability of a component to withstand the impacts when dropped repeatedly.

This standard (Part 5/Sec 1) is based, without any technical change on IEC Pub 512-5 (1977) 'Electromechanical components for electronic equipment; Basic testing procedures and measuring methods : Part 5 Impact test (free components), static load tests (fixed components), endurance tests and overload tests', 512-5 A (1980), 512-5 B (1981) and Amendment No. 1 to 512-5 A, issued by the International Electrotechnical Commission (IEC).

In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

BASIC TESTING PROCEDURES AND MEASURING METHODS FOR ELECTROMECHANICAL COMPONENTS FOR ELECTRONIC EQUIPMENT

PART 5 IMPACT TESTS (FREE COMPONENTS), STATIC LOAD TESTS (FIXED COMPONENTS), ENDURANCE TESTS AND OVERLOAD TESTS

Section 1 Impact Tests (Free Components)

1 SCOPE

1.1 This standard (Part 5/Sec 1) covers free fall (repeated) test and mechanical strength impact test.

2 REFERENCES

2.1 The Indian Standards listed below are necessary adjuncts to this standard.

IS No.	*Title*
IS 616 : 1981	Safety requirements for mains operated electronic and related apparatus for household and similar general use
IS 12448 (Part 2/ Sec 1) : 1988	Basic testing procedure and measuring methods for electromechanical components for electronic equipment : Part 2 General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests Sec 1 General examination

3 TEST 7a : FREE FALL (REPEATED)

3.0 General

The object of this test is to detail a standard test method to assess the ability of a component to withstand the impacts it would receive when dropped repeatedly.

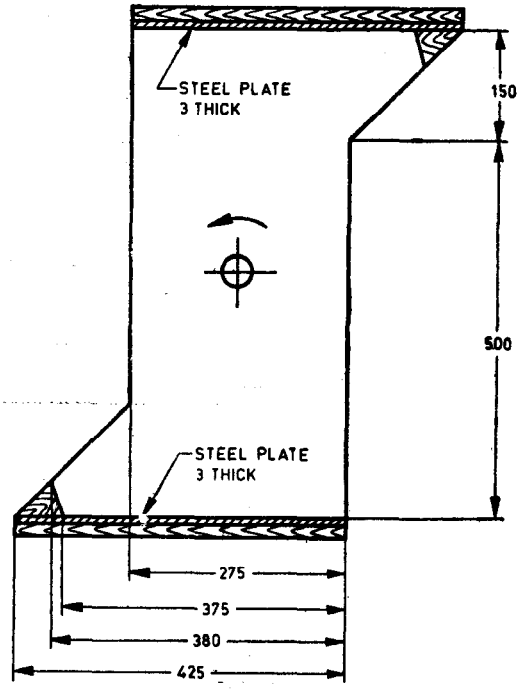
3.1 Preparation of the Specimen

Unless otherwise specified, the specimen shall not be mounted or wired but shall be fitted with normal accessories according to the detail specification.

3.2 Test Method

The specimen shall be tested in tumbling barrel as shown in Fig. 1. The barrel turns at a rate of approximately 5 rev/min. The total number of revolutions (falls) shall be according to the detail specification.

NOTE — When IS 616 : 1981 applies, the barrel revolves 50 times if the mass of the specimen is up to 250 g and 25 times if the mass is greater than 250 g.



All dimensions in millimetres.

FIG. 1 TUMBLING BARREL

3.3 Final Examination

This specimen shall be visually examined according to Test 1a in accordance with IS 12448 (Part 2/ Sec 1) : 1988. If required by the detail specification, operation shall be checked.

3.4 Requirements

There shall be no broken parts or damage that would impair normal operation.

3.5 Details to be Specified

When this test is required by the detail specification, the following details shall be given:

a) Preparation of the specimen;

b) Accessories to be installed, when appropriate;

c) Total number of revolutions (falls);

d) Operational requirements; and

e) Any deviation from the standard test method.

4 TEST 7b : MECHANICAL STRENGTH IMPACT

4.0 General

The object of this test is to detail a standard test method to assess the ability of an electromechanical component, on the end of a cable or wire bundle, to withstand impacts it could receive when dropped on to a hard surface.

4.1 Preparation of the Specimen

The specimen shall consist of a free connector or a similar component with its accessories fitted in the normal manner and wired as used in the normal application. The specimen shall be prepared in accordance with the detail specification. If the component is normally provided for use with different types of cables, the thinnest and/or most flexible type shall be used. The length of the cable or wire bundle shall allow the rear of the specimen to be 2 250 ± 10 mm from the point of attachement.

4.2 Test Method

4.2.1 The specimen shall be attached in an appropriate manner at a distance of 2 250 ± 10 mm from the rear of the component so that the specimen may swing freely from a horizontal to a vertical position as shown in Fig. 2.

NOTE — An appropriate manner may be the attachment to a swivel. In many cases, however, simply attaching to a hook may be sufficient.

4.2.2 The specimen shall be attached at one of the following preferred heights:

a) 2 000 ± 10 mm,

b) 1 750 ± 10 mm,

c) 1 500 ± 10 mm,

d) 1 250 ± 10 mm,

e) 1 000 ± 10 mm,

f) 750 ± 10 mm, or

g) 500 ± 10 mm.

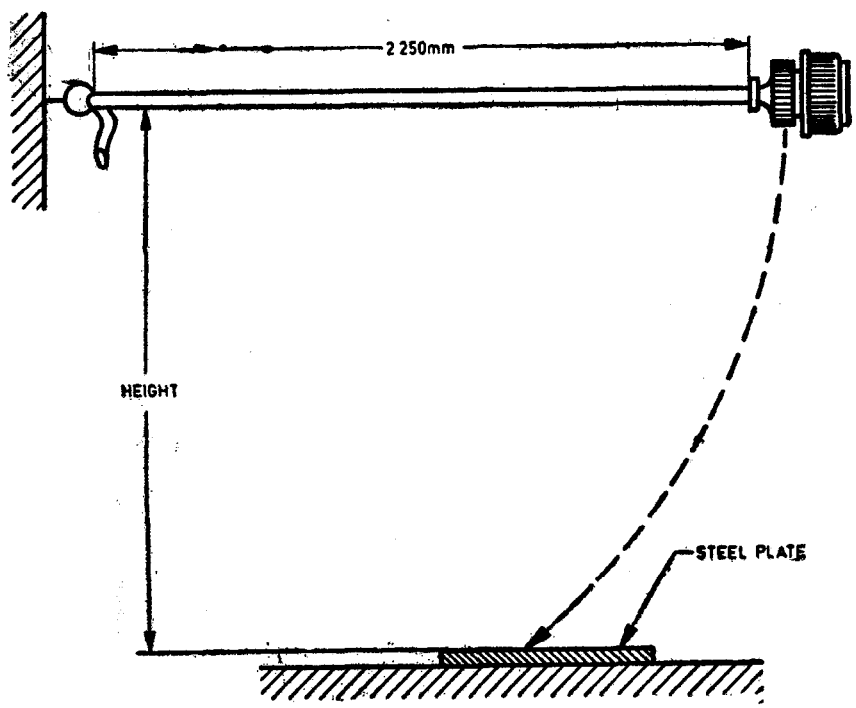


FIG. 2 ARRANGEMENT FOR MECHANICAL STRENGTH IMPACT TEST

4.2.3 A steel plate 300 mm × 500 mm of 25 mm thickness shall be positioned so that the component under test will fall on it.

4.2.4 The specimen, attached at the specified height, shall be held in a horizontal position in an attitude as specified and dropped on to the steel plate. This cycle shall be repeated to a total number of times as specified in the detail specification.

4.3 Test Requirements

The component shall be visually examined. There shall be no broken parts nor damage that would impair operation.

4.4 Details to be Specified

When this test is required by the detail specification, the following details shall be specified:

a) Preparation of the specimen;
b) Type of accessory, when required;
c) Cable or wire to be used;
d) Height or heights the component is to be dropped from;
e) Number of dropping cycles at each height;
f) Operational tests;
g) Any deviation from standard test method; and
h) Attitude of the specimen.

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